Proposal Reviews

#254: Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage

Wondjina Research Institute

Research and Restoration Technical Panel Review	
San Joaquin Regional Review	
External Scientific Review	#1 #2 #3 #4 #5
Environmental Compliance	
Budget	

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Research and Restoration Technical Panel Review Form

Proposal Number: 254

Applicant Organization: Wondjina Research Institute

Proposal Title: Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;
Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;
Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;
Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Superior	**Though dredge tailings are potentially of economic and perhaps social importance, this proposal fails completely to describe how the project goals will be reached. This is not a research proposal, nor is it monitoring. It simply involves taking 400 samples and analyzing them. The proposal should be revised to better address the key biogeochemical cycling questions regarding trace metal transport.**
-Above average	
-Adequate	
XNot recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

   The goal of this project is essentially to assess the chemical characteristics of mine tailings in the Upper Merced River. This goal is stated very clearly but there are no hypotheses to be tested. The panel does not consider that this goal is an important priority relative to other watershed issues. Reviewers questioned whether the project, as such, could be considered research. The project is of commercial interest and has limited areal focus. There is no real conceptual model of what the results will be and how they may be used from a management perspective.

   There is little in the way of scientific justification provided in the proposal. It seems the main arguments are social/economic. It was very difficult to determine how significant the problems to be addressed are relative to other priority concerns and justification for the

archeological part of the project is unclear.

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

   There are no details given in the proposal about how this project will be carried out. It is not expected that novel methods or approaches will come out of the project. The information to be provided will mainly have to do with the properties of dredge tailings. Whereas assessment or monitoring is a worthy area for study in these tailings, the characterization for reuse may be a simple task. Determining the environmental fate is the more difficult challenge and the proposal does not address key concerns of metal cycling, especially those that lead to bioaccumulation.

   One reviewer raised questions as to what the management response to the results of this project would be and highlighted the need to consider potential effects on the water and watershed quality should a full-scale restoration project be implemented based upon the projects findings.

   The applicants are capable of conducting this work described in the proposal, but if they were to team with other experts in the field of trace metal cycling in the environment and revise the project to include investigation of transformation and transport of metals in the study area would make for a much stronger project.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

   The project will provide information that has value (i.e., characterization of the tailings), most particularly to property owners in the area.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   This 1 year project has a total budget of $791,642 (relatively expensive). One of the reviewers commented that this is a lot of money for a non-research project that should have some contribution from the property owners.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

   San Joaquin Regional review ranked the proposal low and questioned using public funds for this purpose. They considered that there is no need to independently identify material for habitat restoration.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

   Re. Environmental compliance: no issues. Re. Budget: no work schedule provided nor tasks identified. Description of expenses very general. Incomplete project management. Discrepancies in amounts requested.

Miscellaneous comments:

None

San Joaquin Regional Review:

Proposal Number: 254

Applicant Organization: Wondjina Research Institute

Proposal Title: Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage

Overall Ranking: **X**Low **-**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

The use of public funds to determine the value of local landowners aggregate by measuring the levels of mercury and other heavy metals is questionable at best. Any habitat restoration project, as part of it's funding, will identify viable material for its use. The need to indepently identify the material in this proposal is just not there.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   Local landowners, where the study is to occur, support the project and are voluntarily participating in it. It is expected that aggregate will be in increasing demand as UC Merced is built, and determining whether the aggregate from the Placer gold dredge mining can be economically utilized is of great interest to them. The proponents have experience undertaking this kind of project and have been doing this kind of analysis on adjacent properties. No permits are required for the Test Hole program.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   XYes **-**No

   How?

   Barely yes. SJ-2: Restore geomorphic processes in stream and riparian corridors. This evaluation is one of the first steps to determine if this area can undergo floodplain/channel restoration. This project would help determine whether the dredge material is low enough in mercury and other heavy metals so it could be used for aggregate, spawning gravel augmentation, floodplain development or mining-pit fill. To reestablish the floodplain in this area would require a great deal of these tailings to be removed, and if the material was viable as aggregate, it would help mitigate the expense of any floodplain restoration project considerably.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   XYes **-**No

How?

This area has been suggested as a source of fill material for possible riparian restoration projects in the future. Areas that have acceptable levels of mercury, heavy metals, orthophosphates and nitrates could be identified and used for such projects.

4. Does the project adequately involve local people and institutions?

XYes **-**No

How?

The local landowners that own 2,000 acres of dredge tailings (some of which are included in the study area) strongly support this study. The general population of the Snelling-Merced Falls area would be intimately involved through a series of workshops on a variety of related topics through a Project Office in Snelling.

Other Comments:

While the information that can be gotten from this study could possibly benefit other restoration efforts, the way the proposal is written, it seems that it is more appropriate for the CALFED Watersheds Program rather than the ERP.

Not sure if the use of public funds is appropriate for landowners to determine if their material is clean enough to sell for restoration purposes or in-stream gravel augmentation. If there are projects that are in need of a gravel source or specific projects that want to restore the floodplain in this area, that is when the dredge material should be analyzed. Within the feasibility or preliminary studies for channel/floodplain restoration projects, there is usually included the analysis of aggregate for mercury and other contaminants.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **254**

Applicant Organization: **Wondjina Research Institute**

Proposal Title: **Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**It is not research, and it is pretty basic sampling and analysis, but the proposal is generally well written.**
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals are very clear - basically what you see in the title is what you get. The objectives are also clear. There are no hypothesis, this is not scientific research, rather it is simple testing of material in a 10 mile reach of the Upper Merced watershed. I do not see what is being proposed as that timely or important relative to other watershed issues. Moreover, I would have thought that this program would have been paid for by those impacted by the tailings since it will improve their property values, etc.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project

justified?

Again, this is not research, simply an expensive proposal to take some 400 samples and analyze them. This work does build on previous work, but I question funding this proposal since it is so commercial and limited in areal focus.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approach is well designed, very straightforward. The results will provide information that will help clean up a section of the Upper Merced watershed, but there is no novel information, methodology or approaches being generated. Yes, the information will be useful to decision-makers, related to the specific issue of tailings in a 10 mile reach of the Upper Merced watershed.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   There should be no problem doing this work, it is so straightforward and not research. Success should be 100%. The scale is consistent with the objectives.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   Performance can simply be measured based on the number of samples taken and analyzed relative to the proposal. This is not a problem.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The project will provide information that has value, most particularly to property owners in the area. As detailed, it will allow a determination related to clean-up of the tailings.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   They can certainly do this work based on their track record, previous work in the area, and available support.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   A lot of money for a non-research project that in my opinion should have at least some contribution from the property owners since it will clearly benefit them. And are there no PRPs who could pay for this? Also, there seems to be a problem with the budget. The answer to question 17 notes they are asking for $650,000. However, the detailed budget shows a requirement for $791,642.

Miscellaneous comments:

Peer review is typically used for research proposal. This is not a research proposal, nor is it monitoring. It simply involves taking 400 samples and analyzing them, and reporting on the results relative to potential remediation of a 10-mile stretch of contaminated river. This is not the sort of proposal for which this type of funding is requested. A decision to fund or not will not be based on science (the work proposed can certainly be done) but on management considerations (what is the priority for this work relative to other watershed issues). As such I am not sure this review is all that helpful. Perhaps there is a need for an initial management screening of proposals before they go out for scientific peer review?

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **254**

Applicant Organization: **Wondjina Research Institute**

Proposal Title: **Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

NONE

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**Though dredge tailings are potentially of economic and perhaps social importance, this proposal fails completely to describe how the project goals will be reached.**
-Good	
XPoor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   This project will examine the nature and suitability of dredge tailings to be used as various classes of aggregate materials and as fill for watershed restoration projects. The goals of the study are 1. Delineation of the areal extent and volume of the dredge tailings materials, 2. Determination of the lithological character of the tailings materials (including soundness, durability and suitability for producing aggregates and fill materials. 3. Determination of the nature and extent of mercury and other metals in the tailings. 4. Characterization of water quality (esp. organic Hg/phosphate, metal, nitrate) within the dredge tailings area. 5. Characterization of human use of te study area from prehistoric times to present.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   There is little in the way of scientific justification provided in the proposal. It seems the main arguments are social/economic. Very difficult to determine how significant the problems to be addressed here relative to other priority concerns. How does the archeological part of the project fit with the rest?

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   There are no details on how this project will be carried out. Not expected that novel methods or approaches will come out of the project. The information to be provided will mainly have to do with the properties of dredge tailings.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   No, the approach is not documented at all. Cannot determine whether it is technically feasible. Since some of the lands are private and sampling will require land-owner agreement, this could potentially provide some limitations.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   No performance measures were explicitly identified by the applicants.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   Main products identified to be 1) information on the areal distribution and concentration of organic and inorganic Hg, metal and nitrate contamination in the study area, 2) information on the extent and character of a resource of aggregate materials suitable for aggregate products and materials suitable for fill for watershed restoration projects and anadramous fish spawning areas, 3) identification of lands that are worthy of preservation or have the potential to contain prehistoric and or historic era cultureal sites, 4) community involvement.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The project team seems to have the necessary combination of skills to conduct this project.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

This is a very different kind of proposal (in both style and content) than all of the others I have reviewed. Difficult to judge it relative to the others.

They never even describe what dredge tailings are.

<u>Miscellaneous comments:</u>

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **254**

Applicant Organization: **Wondjina Research Institute**

Proposal Title: **Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**Overall, I found the objectives and project outline to be very good and the anticipated information gained from this project should be of great value to the community and decision-makers on future management of the site. Strengths of the proposal include its community involvment and the expertise/experience of the project team. However, the proposal is lacking in detail on the specific methods/approach that would be employed for the various facets of the project.**
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   Yes, the goals are clearly stated at the beginning of the proposal and used/referred to consistently in the remainder of the proposal.

   The concept is timely as the dredge tailings in the Upper Merced River represent an existing issue of concern to the surrounding community and authorities. Proper delineation and assessment of the tailings (e.g. areal extent and degree of contamination) would aid the decision-makers in eth proper management of the area; potentially improving the quality and size of the watershed.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   Project is justified relative to existing knowledge about this site. Requisite information about this site for informed decision-making and management is not currently available and this project would address this problem.

   Conceptual model not clearly stated in proposal. However, basis for the proposed work is clearly explained. As the tools/methodology proposed here are well known/utilized in previous studies, a pilot study is not needed and full-scale implementation of the project is justified.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   Approach is based upon previous experiences with similar projects by applicants and should allow objectives to be achieved. However, detailed information about how the approach or specific methodologies would be implemented is lacking (e.g. basis for selection of sample sites, analytical methods used, materials testing work). Additional information in this regard would be helpful.

   Results are likely toad to the base of knowledge providing information on the extent and quality of the tailings.

   Project will result in novel information in that a detailed, characterization data on the tailings does not currently exist. Novel technology from this study is not likely nor the goal although it may provide key methodological information on cost-effective technologies for potential site remediation/recovery, which would likely follow on the successful completion of the project. Results will be of direct use to decision-makers for proper management of the site.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The approach is not fully documented and additional information would be helpful. However, the approach is technically feasible and the project should have a high probability for success (i.e. achieving project goals) given the type of work being done and the experience of the applicants. Scale of project is consistent with objectives.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The proposal does not include specific delineation of performance measures to assess project success. As the objectives are relatively objective determinations (e.g. determine extent of Hg levels in tailings), the projects overall success should be easy to assess though. Not a restoration project but would be the pre-cursor to one.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The main product of value from this project would be the quantitative information generated about the dredge tailings in the Upper Merced river, thus allowing for informed decision-making and management of the site with greater certainty. Additional products would be assessment of cost-effective technologies for removal/processing of the tailings and the potential determination of the tailings as an aggregate resource.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Applicants have a very good track record with previous, relevant projects. Most recent (relevant) project completed on-time and under-budget. This project team is well qualified with good expertise and experience for the work being proposed. They appear to have the infrastructure and related support necessary to successfully implement and complete the project.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The type and number of samples taken (e.g. 400 Backhoe test pits and 50 drilled test holes), the corresponding work and analyses, and personnel and equipment requirements, makes the budget reasonable and adequate for the work proposed.

Miscellaneous comments:

It is anticipated that should this project be funded and successfully completed, the appropriate dredge tailings identified will be removed and/or processed in a follow-up project. Although not directly related to the goals or success of this project, some consideration should be given to the potential effects on the water and watershed quality should a full-scale restoration project be implemented based upon this projects findings. For example, the removal and/or processing of dredge tailings for aggregate use or treatment could release more metals/other contaminants back into the watershed. The sampling/work done in the proposed project could be used as a pilot study to look at these potential effects for any follow-up work in the area.

External Scientific: #4

Research and Restoration External Scientific Review Form

Proposal Number: **254**

Applicant Organization: **Wondjina Research Institute**

Proposal Title: **Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**This is not a bad concept for a project. It addresses a real concern in the watershed and allows for public participation in the process. The PIs need to revise their proposal to better address the key biogeochemical cycling questions regarding trace metal transport, though. Assessment is a nice idea, but you have to have a clear idea of where you are headed with the results. A stronger proposal with clear objectives and hypotheses is warranted.**
-Good	
XPoor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The PIs present a project that is basically an assessment of the chemical characteristics of mine tailings in the Upper Merced River. They state 5 specific goals of the project, mainly relating to characterization. There are no clear hypotheses presented, only anticipated outcomes of the monitoring. While the assessment of mine tailings is indeed a timely concept, there appears to be little attention given to processes that may ultimately lead to a health concern.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   Assessment is justified for contaminated mine tailings in this region of California. The authors have the foresight to look at removal/use options for tailings. However, there is no real conceptual model of what the results will be and how they may be used from a management perspective. Assessment or monitoring is a worthy area for study in these tailings, but the characterization for reuse may be a simple task. The environmental fate is the tricky issue and the PIs really dont address key concerns of metal cycling, especially those that lead to bioaccumulation.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   Again, I am not sure what the results will be and what type of conceptual model synthesizes the results. I think that the PIs need to truly explore the major questions regarding trace metal cycling and what the potential effects of management options might be. It would appear that they could deign a small-scale demonstration project on management options. Certainly there are laboratory studies that can be conducted on leaching and characterization of metal speciation. There is really no discussion about the factors that affect bioaccumulation of trace metals and this appears to be the overriding question for several areas in the Bay-Delta watershed. I suggest that the PIs partner with other experts in the field of trace metal cycling in the environment. Their team presently is slid in hydrology and geology, but they tend to miss experience in the important biological transformations that regulate trace metal reactivity and accumulation. I am not saying that an assessment is not warranted, but it should be couched in terms of effects on biological species. The addition and revision of a proposal to those concerns would be worthy of funding.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The assessment may be technically feasible, but the success of truly understanding the extent of the environmental damage is unlikely. The scale of the project may be consistent with the objectives, but the objectives need serious revision. The public will want much more than an assessment and a list of options for remediation. They will need to know the extent of environmental insult.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   The assessment may be technically feasible, but the success of truly understanding the extent of the environmental damage is unlikely. The scale of the project may be consistent with the objectives, but the objectives need serious revision. The public will want much more than an assessment and a list of options for remediation. They will need to know the extent of environmental insult.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   Again, it is unlikely to see the value of the results of a simple assessment. There needs to be a better understanding of transformation and transport of metals in this study area.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   While the PIs are well respected and published in their fields of study, their lack of a true biogeochemist is a true hole in this proposal. They need to partner with experts who can help transform this project into a true geochemical cycling study to better understand the results.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   As such, this is a costly project with a high budget. One year and Phase I at that, for 800K seems awfully excessive for a weakly developed proposal.

Miscellaneous comments:

External Scientific: #5

Research and Restoration External Scientific Review Form

Proposal Number: **254**

Applicant Organization: **Wondjina Research Institute**

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Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**The overall goal of the proposed work is useful and timely. It is extremely important to establish what materials can be used for fill in restoration projects. However, the authors do not present enough information on the approach and methods to determine if they can meet even this overall goals. They also need to identify the products they will produce. They also need to show how those products will be useful to a broad spectrum of users, how they will conduct the details of the study and how they will assure that the data generated is representative, precise and accurate.**
-Good	
XPoor	

1. **<u>Goals.</u>** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The general goals are clearly stated, to identify the presence/absence of mercury and other contamination in dredge tailings in part of the Merced drainage. The hypotheses are not stated clearly. The concept is timely, in that restoration is ongoing and clean fill materials for restoration are needed throughout the region.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   The authors do not justify the project well in the context of what is known in the area or the discipline and how this will enhance present understanding. They only generally justify the project and do not relate it to a body of knowledge on the subject, either locally or in a broader context. The conceptual model, as presented, is simplistic. There needs to be a much stronger effort to put this in context of what is expected based on published literature of mercury and nutrient contamination and what exactly is expected. The detailed methods to be used are not presented. The exact methods to be used must be presented, and referenced. There is only a mention of "informal" contact with the EPA and USGS about methods. Sampling methods for water, soils and sediment are well established and published a number of peer-reviewed papers and reports by both agencies. The authors need to identify exactly which of these methods they will use and why they are appropriate. This is especially true for mercury sampling. It is extremely difficult to collect mercury samples without cross contamination (especially for water) and ultraclean methods must be used to assure high-quality data.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   There are shortcomings in the approach as presented. The details of the approach are not given--there is essentially no detail of what the authors will do and how they will do it. What will be done when and why. The authors need to develop a detailed approach that lays out the efforts and justifies each one in the context of the goals. For example: When will mapping of the dredge tailings be conducted and what data already exists? How will it be conducted (detailed methods, precision, etc.)? What are the limitations of that effort? What is the goal of that effort (why are they being mapped)? This approach needs to be taken for each of the proposed efforts. The authors need to describe the procedures, standards, and documentation for sample collection, preparation, and analysis, which will produce samples of a quality that will meet the objectives of the project. These should be of the highest quality so they can stand the test of peer-review and potentially litigation. Specifically: 1) How will the sampling sites be chosen? What is the philosophy for locating sites? How will they be determined to be representative? What are the limitations of selection (access, private property, etc.)? Can previous data, if it exists, be used to help design a high-quality, representative sampling plan. This is critical to determine if the results will be useful in a broader context or only determine if a particular site is "contaminated". The authors give no details on where the sites will be located and why they chose those sites. Fi they have not chosen sites, then they need to present the detailed methods they will use to assure usable data. It is understandable that sampling may be limited by access. How will limited sampling be dealt with? Why were 400 test pits chosen? Why 50 text holes? 2) What materials will be sampled and by what methods? And why were those materials chosen? How do they give data that will ultimately determine if the material can be used as fill/aggregate? For example: It appears that water will be collected and dissolved organic mercury (methylmercury?), and some other components. Why are these chosen and why not others? What is the importance of these in the context of the stated goals? Are sediment sampled going to be collected? If so, what size and what constituents will be determined on those samples and why are they important? There are two important components to be sampled: aqueous phase and solid phase. Representatively sampling coarse-grained sized materials like, dredge tailings is difficult. How will the authors overcome these limitations? They need to set up a sampling plan that will identify the materials to be sampled and justify those choices in the context of identifying

contaminated and uncontaminated material. 3) There is no presentation of the quality assurance/quality control measures to be used to assure that the data collected is of high quality and the precision and accuracy can be determined. This needs to be presented for all aspects of the project, from sampling design to data analyses. How will the authors assure data quality? What methods will they use to determine field and laboratory variability/error? What methods will they use for sampling? They need to present the details of there approach to assure that all the data they collect will be useable. These techniques are well established in methods papers by the USGS/USEPA and they need to be applied to this particular project.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The approach as presented is not detailed enough to determine the feasibility of the project. The likelihood of success cannot be determined for the project as presented. Much more information needs to be provided before it can be determined if the scale of the project is consistent with the goals.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   There are only general performance measures presented in the proposal. They mostly have to do with information transfer and local meetings. The authors need to specify exactly what they will do to measure the outcomes of their efforts. How will they know that the project is successful? What approaches will they use to determine if they have met their goals? For direct characterization projects like this, the performance can be a bit fuzzy, but the authors need to address the general issue of how they will determine if they met their goals.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   If conducted properly, there should be some valuable products produced from a project like this. The ultimate goal should be a series of maps that delineate the dredge tailings, the concentrations of contaminants of concern in water and sediment within that area, the presence of potentially available aggregate/fill, the presence of unavailable materials, the total columns of available fill, etc. Such detailed goals should be established up front in the proposal and the authors present how they will accomplish these. They have not done that in the present version of the proposal.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The applicants have experience in the mineral industry and defining mining resources in general and for specific projects and other resource related projects. They have presented little experience in geochemistry or hydrology that would be essential for this project. This is especially true for ultraclean sampling techniques, assuring quality of sample/data and interpretation of the data. They may have the infrastructure to conduct the work if they add some expertise in these disciplines.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   There are not enough details presented in the proposal to determine the cost/benefit of the potential outcome. In general, a project of this type and this general scope would cost in the range presented by the authors. The detailed products need to be defined before an final decision can be made on the appropriateness of the budget.

Miscellaneous comments:

Environmental Compliance:

Proposal Number: 254

Applicant Organization: Wondjina Research Institute

Proposal Title: Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

   XYes **-**No

   If no, please explain:

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

   XYes **-**No

   If no, please explain:

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

   -Yes **X**No

   If yes, please explain:

Other Comments:

Budget:

Proposal Number: 254

Applicant Organization: Wondjina Research Institute

Proposal Title: Phase I Heavy Metal and Aggregate Testing of Placer Gold Tailings of the Upper Merced River Drainage

1. Does the proposal include a detailed budget for each year of requested support?

   XYes **-**No

   If no, please explain:

2. Does the proposal include a detailed budget for each task identified?

   -Yes **X**No

   If no, please explain:

   Budget Summary details budget for the 1 year requested funding, but no Work Schedule was provided in the proposal, nor were tasks defined in the proposal.

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

   -Yes **X**No

   If no, please explain:

   Narrative is very general.

4. Are appropriate project management costs clearly identified?

   -Yes **X**No

   If no, please explain:

   Incomplete "PM" narrative under Budget Justification, no data provided to respond, no task defined as "PM".

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

   -Yes **X**No

   If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

Requested $650,000 (17a), Grand Total and Total of requested 1-year budget is $791,642.

6. Does the budget justification adequately explain major expenses?

   -Yes **X**No

   If no, please explain:

   No Work Schedule provided, incomplete Budget Justification.

7. Are there other budget issues that warrant consideration?

   -Yes **X**No

   If yes, please explain:

Other Comments: